

## CLAIMS

1           1. A device for operating on a moving laminar material, in particular for a  
2 bag-making machine, said machine being of the type having at least one work  
3 unit (2) and actuating members (27) adapted to cause advancing of the laminar  
4 material (3) at a reference speed  $V_R$ , the device comprising:  
5           – at least one rotating body (6) having a rotation axis (6a) and a rotation  
6 speed  $\omega$ ,  
7           – at least one guide member (5) in engagement with said rotating body (6)  
8 at an eccentric position with respect to said rotation axis (6a) and movable along  
9 a circumferential trajectory (7) having a work stretch (7a),  
10           – said guide member (5) being connected with said work unit (2) and  
11 having, in said circumferential trajectory (7), a tangential speed  $T$  with a work  
12 component  $T_L$  parallel to the laminar material (3),  
13           – and drive means (9) designed to selectively vary said rotation speed  $\omega$   
14 and reference speed  $V_R$  in a manner adapted to make said work component  $T_L$   
15 in said work stretch (7a) and said reference speed  $V_R$  substantially equal to each  
16 other.

1           2. A device as claimed in Claim 1, wherein alternately said reference speed  
2  $V_R$  and rotation speed  $\omega$  are substantially constant and wherein said drive means  
3 (9) is adapted to alternately impose a variable speed to said rotating body (6)  
4 and laminar material (3) which is correlated with the cosine of a work angle  $\alpha$   
5 included between said tangential speed  $T$  and work component  $T_L$ .

1           3. A device as claimed in Claim 2, wherein said reference speed  $V_R$  of said  
2 laminar material (3) is substantially constant and wherein said drive means (9) is  
3 adapted to impose a rotation speed  $\omega$  to said rotating body (6) and a tangential

4 speed T to said guide member (5) that are variable in inverse proportion to the  
5 cosine of said work angle  $\alpha$ .

1       **4.** A device as claimed in Claim 3, wherein a symmetry plane (8) is  
2 provided that is perpendicular to the laminar material (3) and passes through  
3 said rotation axis (6a) and wherein said work stretch (7a) extends at said  
4 symmetry plane (8) and transversely of same, and at said rotation axis (6a) it  
5 defines a central angle  $\beta$  equal to or smaller than  $120^\circ$ , said guide member (5)  
6 having a tangential speed T included between a minimum value equal to that of  
7 the reference speed  $V_R$ , at said symmetry plane (8), and a maximum value equal  
8 to or smaller than twice said minimum value.

1       **5.** A device as claimed in Claim 2, wherein said rotation speed  $\omega$  of said  
2 rotating body (6) is substantially constant and wherein said drive means (9) is  
3 active on said actuating members (27) of said laminar material (3) to impose a  
4 reference speed  $V_R$  to said laminar material (3) that is variable in proportion to  
5 the cosine of said work angle  $\alpha$ .

1       **6.** A device as claimed in Claim 1, wherein said drive means (9) comprises  
2 at least one electric motor (10), electronic devices (12) active on said electric  
3 motor (10) to vary the rotation speed of same, and sensors (13, 16) to detect at  
4 least the position of said guide member (5) along said circumferential trajectory  
5 (7), said electronic devices (12) being interlocked with said sensors (13, 16).

1       **7.** A device as claimed in Claim 6, wherein said electric motor (10) is a  
2 direct current brushless motor and wherein said electronic devices (12) comprise  
3 SLM or Speed Loop Module circuits.

1       **8.** A device as claimed in Claim 1, wherein said drive means (9) comprises  
2 at least one motor (10) and transmission members extending downstream of said

3 motor (10), and wherein said transmission members comprise non-circular  
4 kinematic elements adapted to convert a substantially constant rotation speed of  
5 said motor (10) into a variable rotation speed.

1       **9.** A device as claimed in Claim 8, wherein said non-circular kinematic  
2 elements comprise at least one shaped pulley (17) having a major symmetry axis  
3 (17b) and a minor symmetry axis (17c) orthogonal to each other and  
4 substantially defining virtual diameters of virtual wheels ( $W_1$ ,  $W_2$ ), a rotation  
5 center (17a) of said shaped pulley (17) being provided at the intersection of said  
6 major and minor symmetry axes (17b, 17c).

1       **10.** A device as claimed in Claim 1, wherein means (20) for adjusting the  
2 position of said guide member (5) relative to said rotation axis (6a) is provided, in  
3 order to select the diameter of said circumferential trajectory (7).

1       **11.** A device as claimed in Claim 1, wherein support means (4) interposed  
2 between the work unit (2) and said guide member (5) is provided, which comprises  
3 deformable compensation devices (21) adapted to allow position variations of the  
4 work unit (2) in a direction perpendicular to the laminar material (3) in the  
5 presence of stresses in a direction perpendicular to the laminar material (3).

1       **12.** A device as claimed in Claim 1, wherein support means (4) interposed  
2 between the work unit (2) and said guide member (5) is provided, which  
3 comprises at least one framework adapted to keep the angular lying  
4 arrangement of the work unit (2) substantially constant with respect to the  
5 laminar material (3).

1       **13.** A device as claimed in Claim 12, wherein said framework comprises a  
2 frame having two crosspieces (24) that are substantially parallel to each other, at  
3 least one of said crosspieces (24) being movable together with one said guide

4 member (5), and at least two column-shaped posts (25) extending between said  
5 crosspieces (24) at right angles thereto, said column-shaped posts (25) slidably  
6 engaging at least one of said crosspieces (24).

1       **14.** A device as claimed in Claim 13, wherein one said crosspiece (24) is  
2 movable together with one said guide member (6) and a second crosspiece  
3 embodies a carriage (29) constrained to carry out a linear movement and driven  
4 by said column-shaped posts (25).

1       **15.** A device as claimed in Claim 12, wherein a plurality of said rotating  
2 bodies (6) is provided and they are disposed consecutive to each other in a  
3 direction parallel to said reference speed  $V_R$ , and wherein said framework  
4 comprises at least one crosspiece (24) extending like a tie-rod and adapted to  
5 interlock said rotating bodies (6) with each other on rotation.

1       **16.** A process for operating on a moving laminar material, in particular for a  
2 bag-making machine, said machine being of the type having at least one work  
3 unit and actuating members adapted to cause advancing of the laminar material  
4 at a reference speed, the process consisting: in moving at least one guide  
5 member connected with said work unit in a circumferential trajectory, said guide  
6 member having, along said circumferential trajectory, a tangential speed with a  
7 work component parallel to said reference speed; and in selectively varying  
8 said tangential speed of said guide member and said reference speed of said  
9 laminar material in a manner adapted to keep said work component substantially  
10 equal to said reference speed at a work stretch of said circumferential trajectory.

1       **17.** A process as claimed in Claim 16, wherein said reference speed is  
2 maintained substantially constant and wherein said tangential speed of said  
3 guide member is varied in inverse proportion to the cosine of a work angle  $\alpha$

4 included between said tangential speed and said work component.

1       **18.** A process as claimed in Claim 16, wherein said tangential speed is

2 maintained substantially constant and wherein said reference speed of said

3 laminar material is varied in proportion to the cosine of a work angle  $\alpha$  included

4 between said tangential speed and said work component.